

NETWORKING

EDUCATIONAL SPACES

Printing Instructions

1. Print the Table of Contents section to obtain an overview of the total document.
2. Print each document section that you are interested in.
3. For a *complete* document, please *print all* sections.

NETWORKING

GENERAL PROGRAM GOALS AND OBJECTIVES STATEMENT

- ☐ The program is designed to provide students with the skills necessary to install, maintain, and troubleshoot computer networks and peripheral equipment, telecommunications equipment, and other related technology applications. Students will install drives, interface cards and other components in computers and microprocessor controlled equipment. They will install software and hardware and configure individual units as well as local and wide area network systems. Instruction will also be provided in the installation of telecommunication devices, routers, switching equipment, cabling, video equipment, and in the preparation of a site. Students will be prepared to take the industry certification tests on completion of the program.

PROGRAM ACTIVITIES

- ☐ Building, repairing, and manufacturing computers and computer related equipment (hubs, switches, routers, etc.)
- ☐ Installing software and equipment
- ☐ Researching reference manuals
- ☐ Internet research
- ☐ Customer Service
- ☐ Cabling and cable termination
- ☐ Record keeping
- ☐ Testing
- ☐ Large and small group activity

- ☐ Team meetings
- ☐ View videos
- ☐ Installing network software
- ☐ Troubleshooting network devices
- ☐ Lecturing and demonstrations
- ☐ Private Branch Exchange (PBX)
- ☐ Telephone System Maintenance

AREAS

DESCRIPTION	EST. STAFF	EST. STUDENTS	SQ. FT. TOTAL
Storage/Cust. Serv	1-2	1	300-600
Storage/Materials, Supplies and Parts			300-600
Workshop/ Classroom	1-2	12-20	1500-2000
Office			150
Storage/Tools			120
Distribution Frame Room			100
Reception		1-2	120
Storage/Archive and Documentation	1-2	10-15	270

INTERNAL/EXTERNAL RELATIONSHIPS - WHAT SHOULD BE NEAR THIS AREA

- ☐ The storage room should be near the workshop.
- ☐ Reception, customer service and the entrance should be adjacent.
- ☐ Office should be adjacent to the distribution frame room.
- ☐ The office, workshop and classroom should all be central and adjacent.
- ☐ The electronics area and the networking area could benefit by being located near each other.

UTILITIES

Plumbing:

- ☐ Plumbing should be positioned or dampened to minimize noise.
- ☐ A double sink with grease trap is needed in the workshop clean up area.
- ☐ An emergency shower and eyewash are needed in the workshop.
- ☐ Compressed air is needed at two areas near the sink.

HVAC:

- ☐ The heating, ventilation, and air-conditioning system needs to be of sufficient size to keep each instructional space at a comfortable temperature to accommodate 30 computers and peripherals.
- ☐ The system needs to have a fresh air exchange system to keep high air quality in each instructional space. This system needs to keep this area cleaner than normal.
- ☐ The workshop air supply and exhaust ducts need to be positioned to minimize any draftiness in the room.

- ☐ A ventilation hood should be installed near the workshop sink area to draw dust particulate from components when opened.
- ☐ The HVAC controls need to be designed to allow individuals the ability to modify the workshop temperature for the instructional requirements of the classroom activities.
- ☐ The HVAC controls need to be positioned so that the room temperature is not “misread” (e.g., not too close to a door, window, or vent).

Electrical:

- ☐ Electrical supply outlets need to be sufficient to meet the electrical equipment needs of the modern classroom.
- ☐ Electrical supply outlets need to be placed on each stationary wall and at the counters in each workroom.
- ☐ Drop down electrical needs to be provided.
- ☐ Surge protection and UPS should be provided at the panel.
- ☐ Each classroom should have occupancy sensors installed for lights.

Lighting:

- ☐ Lighting needs to be even across the classroom.
- ☐ The lighting controls need to accommodate an instructor’s need to vary the light intensity for different instructional tasks. The lighting will be bi-level.
- ☐ The light fixtures need to be energy efficient to keep operating costs at a minimum.
- ☐ Flexible task lighting will be needed at the work area.

Technology:

- ☐ Each workroom should have perimeter computer stations with 1-3 data drops at each station. The instructor's data drops need to be placed in different spots in the room to allow the teacher's desk to be moved periodically.
- ☐ There needs to be 30-35 data drops for the workbench area and repair areas.
- ☐ Two closed networks may be located in the workroom.
- ☐ Each classroom needs to have access to cable TV for commercial, satellite and closed circuit broadcasts over the cable.
- ☐ Phone jacks should be placed near the door to the classroom, the instructor's desk, and near the workbenches.
- ☐ Numerous data drops need to be located at the customer service area, the offices and the storage areas.
- ☐ Two data drops are needed in the demonstration area.
- ☐ A security system for the Network area should be considered.
- ☐ Two phone lines are necessary for fax testing at the customer service area.
- ☐ Anti grounds are needed at each four-plex outlet.
- ☐ The telephone system should be programmed to enable outgoing calls directly from the classroom. All incoming calls should go through the main office switchboard.
- ☐ Each classroom should be equipped with an integrated clock, intercom, and bell system.

- ☐ Each classroom should be equipped with a TV, VCR, electric screen and overhead/LCD projector and smart board, if budget allows.

SURFACES

Floors:

- ☐ Vinyl composition tile or anti static carpet should be considered.

Walls:

- ☐ A 4'x16' white board with friction clips needs to be provided.
- ☐ Wall and ceiling surface materials need to accommodate the acoustical needs of the classroom.
- ☐ Windows need to be of double pane glass and have operable integral blinds where practical.
- ☐ Interior windows are needed between the office and the workshop and between the office and reception if possible.
- ☐ Natural light is preferred, if practical.

Ceilings:

- ☐ The ceiling height of this space should be 8' - 10'.
- ☐ The ceiling should be a durable suspended ceiling with acoustical tile.

Doors:

- ☐ The workroom should have a standard sized exit door.
- ☐ Each entrance door should have a small narrow window.
- ☐ The parts counter should have a roll down counter-height door.

STORAGE

- ☐ The workroom needs to have perimeter base cabinets with adjustable shelves. There should be 4' of knee space between cabinets. The base cabinets should be able to store tools.
- ☐ The workroom needs to have overhead wall cabinets above the base cabinets. Some of these cabinets should be locking and all need adjustable shelves.
- ☐ The workroom needs to have sufficient storage for those specialized books, magazines, and other instructional materials necessary for successful instruction.
- ☐ The center tables/benches should have storage space underneath with adjustable shelves.
- ☐ The customer service area should contain large rack storage, some secure.
- ☐ The office needs base cabinets with knee space for computer stations.
- ☐ The office needs overhead cabinet storage with adjustable shelves.
Some of the cabinets should be locking.
- ☐ The parts area and receiving area should have floor to ceiling storage for small parts (bins, drawers, cubbies etc.)
- ☐ Adjustable shelving and cabinets are needed in the tool room
- ☐ Rack shelving is needed in the distribution frame room.
- ☐ Space is needed for two (2) four-drawer, letter-size file cabinets.

FURNITURE AND EQUIPMENT

- ☐ Sufficient desks, tables, and chairs to meet the needs of the instructional program
- ☐ Specialized work tables/benches are needed in the hardware repair and instructional areas. The heights of the tables will vary with program needs.
- ☐ The instructor's workstation should be partitioned and configured to boot as a server and workstation.
- ☐ Serial Loopback Plug
- ☐ Parallel Loopback Plug
- ☐ Monitor Adapter Cable
- ☐ Cabling Set
- ☐ Television, VCR, LCD projector, and electric ceiling mounted screen
- ☐ Computer equipment should be of sufficient size and speed to operate recent versions of software. It should also be compatible with other hardware and cabling systems, and be expandable.
- ☐ Software should be selected that enables the users to accomplish their educational objectives. Software should include, but not be limited to business applications, graphics, diagnostics, and currently used operating systems.

SAFETY ISSUES

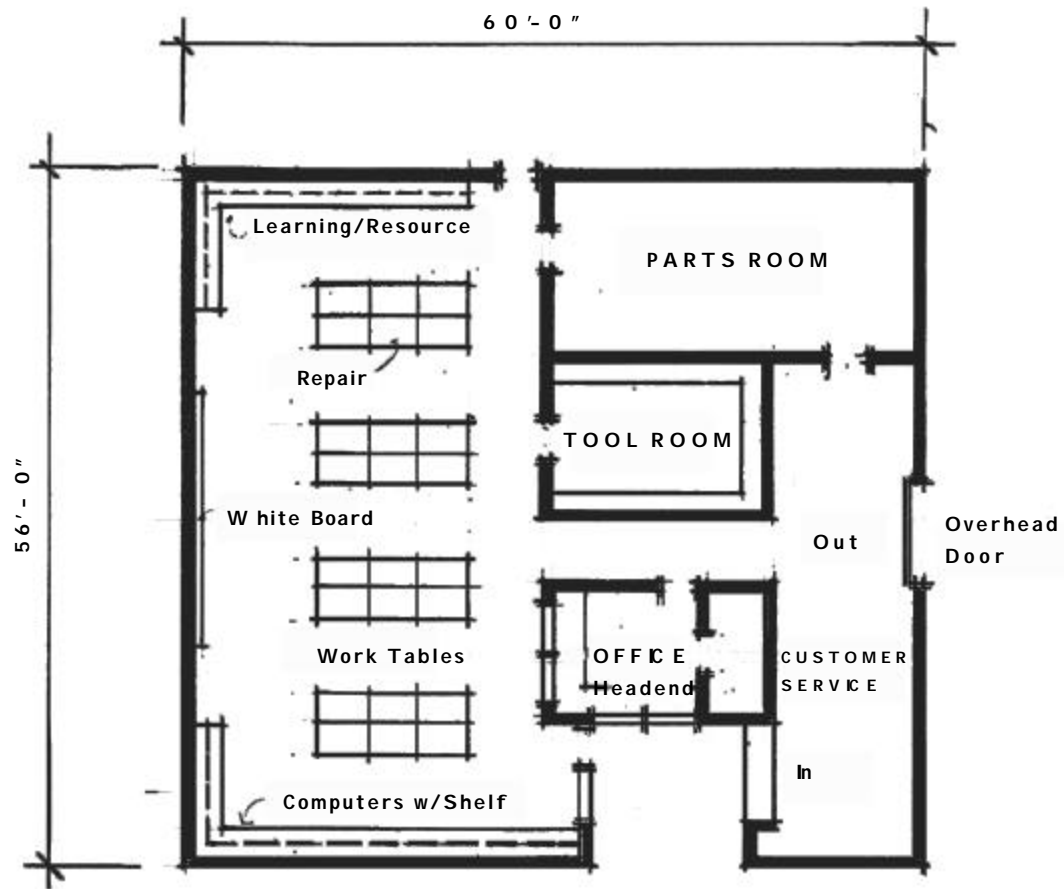
- ☐ Anti-static mats
- ☐ Furniture should be ergonomically correct.

- ☐ Wrist bands
- ☐ Eye protection

IMPORTANT NOTE

The following graphics are intended to show typical spaces and spacial relationships. They are not intended to serve as architectural drawings and are not adapted to specific sites.

These graphics should be used as a starting place for discussions with district personnel, planners, architects and engineers. Almost certainly, changes and adaptations will be required to meet the particular needs of the educational institution and the programs they offer.



NETWORKING

The Matrix Group

Not to Scale